Basic Information:

Assessor Name:	Uditha
Assessor Email	uditha@tskconsultant.com.au
Rainfall Station:	Hobart
City Council:	Brighton Council
Address Line 1:	5-13 Maxwell Drive
Address Line 2:	Bridgewater TAS 7030
Development Type:	Residential-Multiunit
Allotment Site (m^2):	6911.00
Planning Permit No:	DA2022/134

STORM RATING

100% means target achieved.

TN (%)	TP (%)	TSS (%)	GP (%)	Abs. Flow Reductions (%)
103.7	126.1	103.7	114.8	22.2

Overall Reductions

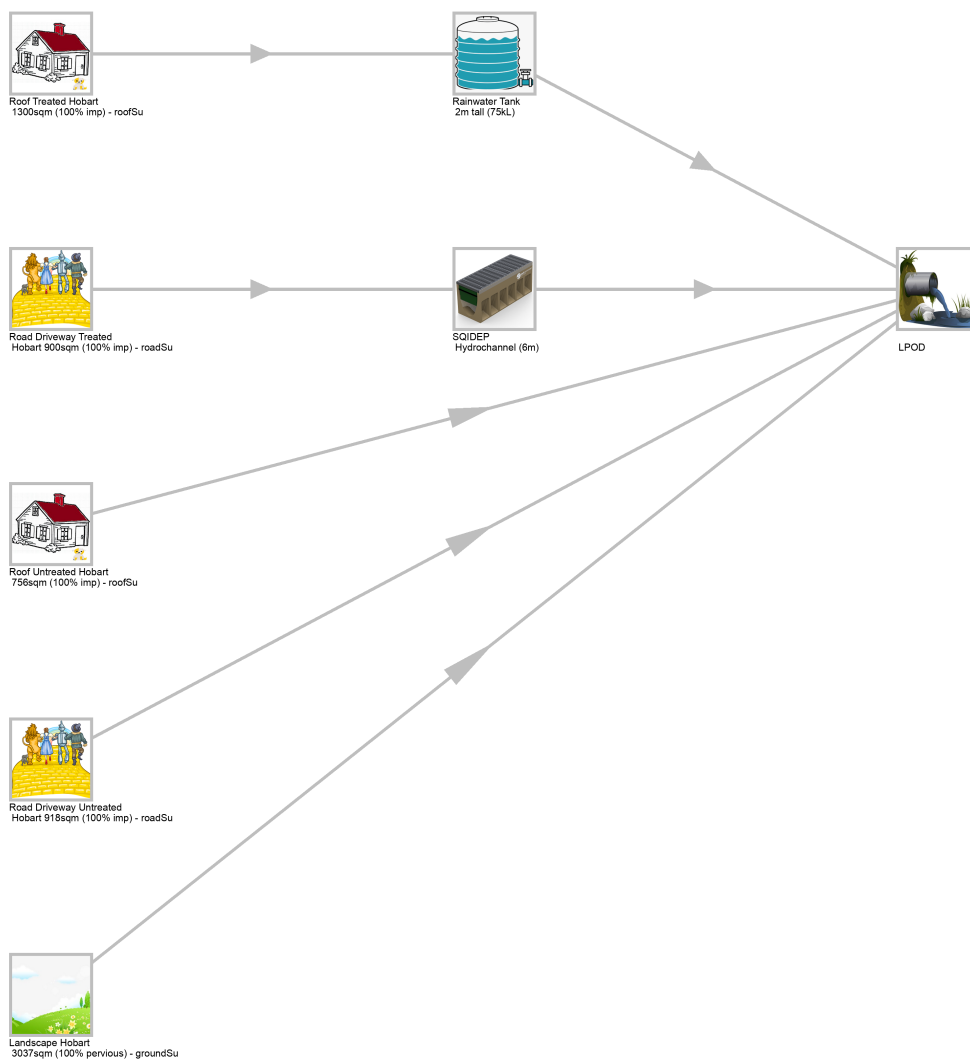|	TN Reduction (%)	TP Reduction (%)	TSS Reduction (%)	GP Reduction (%)	Flow Reduction (%)
Achieved Reductions	46.7	56.8	83.0	80.3	22.2
Target Reductions	45	45	80	70	N/A

Treatment Trains

Impervious Nodes

Impervious Area Name	Impervious Area Type	Impervious Area (m^2)	Treatment Type	Treatment Size (m^2 f/ L / items)	No. of Bedrooms / Occupants
Roof Treated	Roof	1300	Rainwater Tank - Above Slab	75000	100
Road + Driveway Treated	Road	900	SQIDEP Hydrochannel (1m)	6	N/A
Roof Untreated	Roof	756	None	N/A	N/A
Road + Driveway Untreated	Road	918	None	N/A	N/A

Pervious Nodes

Pervious Area Name	Pervious Area Type	Pervious Area (m^2)	Treatment Type	Treatment Size (m^2 / L / items)
Landscape	Ground	3037	None	N/A

Treatment Trains

Individual Treatment Reductions

Impervious Nodes

Impervious Area Name	Treatment Name	TN Reduction (%)	TP Reduction (%)	TSS Reduction (%)	GP Reduction (%)	Flow Reduction (%)
Roof Treated	Rainwater Tank - Above Slab	78.07	71.88	81.3	100	77.67
Road + Driveway Treated	SQIDEP Hydrochannel (1m)	66.33	68.31	87.12	99.74	0
Roof Untreated	None	0	0	0	0	0
Road + Driveway Untreated	None	65.66	67.61	86.24	99.6	0

Pervious Nodes

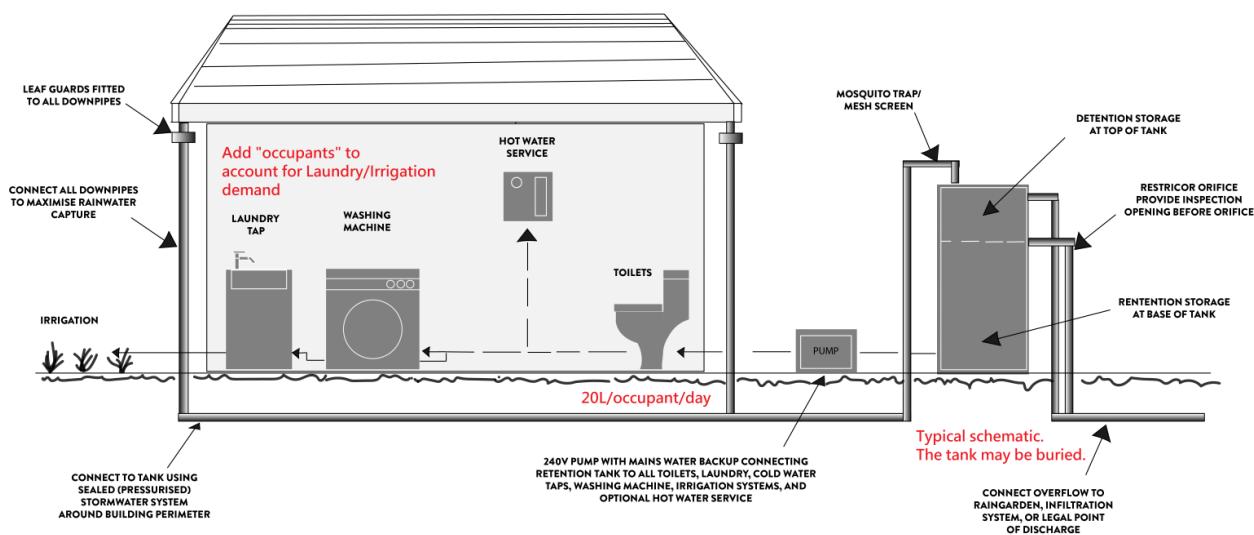| Pervious Area Name	Treatment Type	TN Reduction (%)	TP Reduction (%)	TSS Reduction (%)	GP Reduction (%)	Flow Reduction (%)
Landscape	None	0	0	0	0	0

Specifications and Typical Drawings

Typical schematic of rainwater tank connections to house

RETENTION TANK RETICULATION DETAIL

LEAF GUARDS FITTED TO ALL DOWNPIPES

CONNECT ALL DOWNPIPES TO MAXIMISE RAINWATER CAPTURE

IRRIGATION

Add "occupants" to account for Laundry/Irrigation demand

LAUNDRY TAP

WASHING MACHINE

HOT WATER SERVICE

TOILETS

20L/occupant/day

MOSQUITO TRAP/ MESH SCREEN

DETENTION STORAGE AT TOP OF TANK

RESTRICOR ORIFICE PROVIDE INSPECTION OPENING BEFORE ORIFICE

RENTENTION STORAGE AT BASE OF TANK

PUMP

Typical schematic. The tank may be buried.

CONNECT TO TANK USING SEALED (PRESSURISED) STORMWATER SYSTEM AROUND BUILDING PERIMETER

240V PUMP WITH MAINS WATER BACKUP CONNECTING RETENTION TANK TO ALL TOILETS, LAUNDRY, COLD WATER TAPS, WASHING MACHINE, IRRIGATION SYSTEMS, AND OPTIONAL HOT WATER SERVICE

CONNECT OVERFLOW TO RAINGARDEN, INFILTRATION SYSTEM, OR LEGAL POINT OF DISCHARGE

RETENTION TANK RETICULATION DETAIL
N.T.S.
NOTE: THE DESIGN AND INSTALLATION OF ALL STORMWATER SYSTEMS SHALL COMPLY WITH AS/ANZS 3500.3:2018 "STORMWATER DRAINAGE".

- We assume 20L/person/day demand for toilet flushing.
- We also assume one person/occupant per bedroom.
- To account for laundry and irrigation use, please add to the number of occupants. Total demand for the tank per day will be considered as the number of bedrooms, multiplied by 20L.

Above-Ground Rainwater Tanks

NOTES:
1. THIS CHARGED SYSTEM DOES NOT PERMIT ANY SURFACE WATER TO BE DISCHARGING INTO.
2. THIS TECHNICAL SOLUTION SHOULD BE READ IN CONJUNCTION WITH 'TECHNICAL SOLUTION 5' COLD WATER PLUMBING-RAINWATER TANKS CURRENT AS AT JULY 2004.
3. ALL PLUMBING/ DRAINAGE WORKS TO BE CONSTRUCTED AS PER RELEVANT AUTHORITIES OR TO BUILDING SURVEYOR SATISFACTION.
4. ALL DOWNPIPES AND FITTING ON CHARGED SYSTEM TO BE INSTALLED AS PER AUSTRALIA STANDARDS AS/NZS 1260 AND TO BE FULLY SOLVENT CEMENT WELDED.
5. FOR NUMBER, TYPE AND DIMENSIONS OF TANK REFER TO ARCHITECTURAL DRAWINGS.
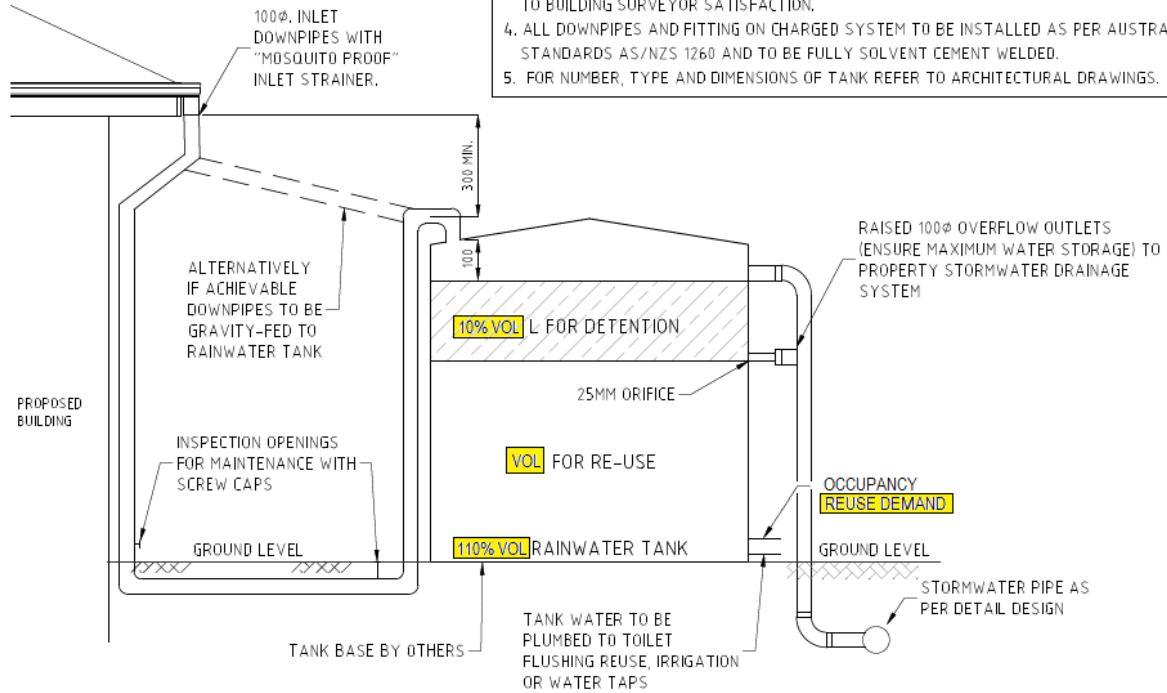
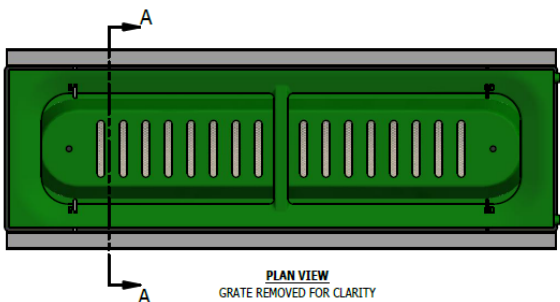CHARGED SYSTEM RAIN WATER TANKS (RETENTION ONLY)
NOT TO SCALE

Impervious Nodes

Impervious Area Name	Re-use Demand (L/occupant or bedroom/day)	No. of Occupants or Bedrooms	REUSE DEMAND (L/day)	VOL FOR REUSE (L)	10% VOL FOR DETENTION(L)	110% VOL RAINWATER TANK (L)
Roof Treated	20	100	2000	75000	7500	82500

SQIDEP Hydrochannel

PLAN VIEW
GRATE REMOVED FOR CLARITY

Dimensions for 1m long Hydrochannel. To be installed in multiples of 1m .
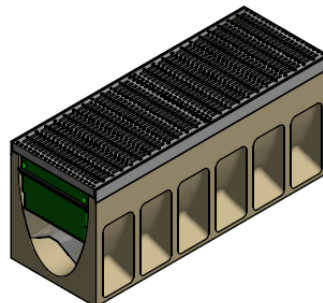
ISOMETRIC VIEW

SECTION A-A

FLOOR GRATE - ACO DRAIN
SEDIMENTATION CHAMBER
GRANULAR FILTER BAG
REFER TO DRAWING:
SP18-HC21740-C
ACO DRAIN CHANNEL SECTION
K300 OR EQUIV. BY OTHERS

360
304
31
189
212
130
197
318

1000
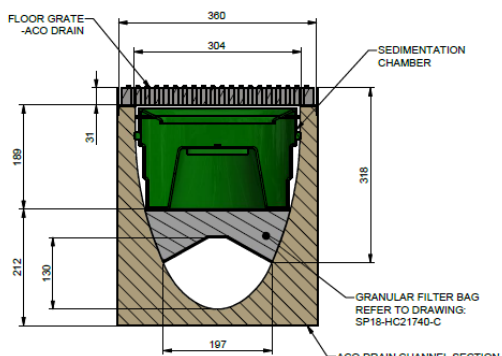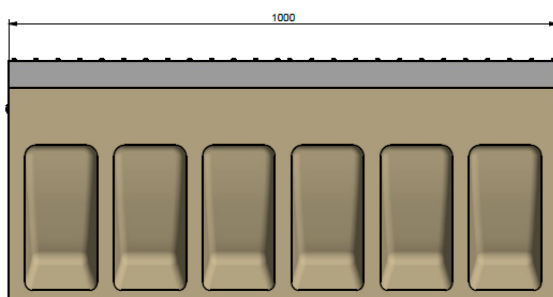
ELEVATION VIEW

SPEL Hydrochannel sizing guide can be downloaded: here

Job Address : 5-13 Maxwell Dr Bridgewater TAS 7030

Pipe Capcity Calculations.
Accommodate a stormevent with a 5% AEP (1 in 20 yr ARI)

Total site area=	6911	m2	
Total Impervious Area =	3874	m2	0.9
Total Pervious Area =	3037	m2	0.4

Coefficient of run off, C = (3874*0.9+3037*0.4)/6911
Coefficient of run off, C =   0.68

13m fall over 130m within the site - 10% avaergae grade

Time fo Concenntration,Tc =	15	min	(5+10=15mins)
ARI=	20	YEARS	
I=	50.5	mm/hr	
CI=	34.34		

Pipe for Pit P1 to LPD1

Catchment Area=	5600	m2		
Tc=	15	min		
C=	0.68			10000
ARI=	20	YEARS		360
I=	50.5	mm/hr		1000
CI=	34.34			

Using rational Formula

Q= CIA/360
Q= 0.68X50.5X0.56/360
   =   0.0534 m3/sec
   =   53.42 l/sec

Use manning formula to determine the required outlet pipe capacity to drain the 53.42 l/sec
Using 300mm dia UPVC at 1 in 200 minimum slope

RCP pipe diameter =	0.300	m
RCP pipe radius =	0.150	m
Wetted perimeter =	0.9426	m
Area =	0.0707	m^2
Hyd radius =	0.075	m
slope =	0.005	200
Mannings n =	0.011	
Capacity =	0.0808	m^3/s
Capacity =	80.82	l/sec
Velocity =	1.14	m/s

Prposed Pipe cxapacity (q=80.82 l/sec) > 1 in 20 ARI Flow (Q=53.42 l/sec)
Therefore 300mm dia UPVC pipe at 1 in 200 minimum slope is adequate for 1 in 5 ARI flow

Start	End	Catchment size	CI	Q- Actual flow 5% AEP (Q= CIA/360) L/sec	Prposed Pipe				Descriptions (Pipe capacity is grater than the actual flow of 5% AEP)
					Pipe size dia -mm	grade @ 1 in _	q-capacity (L/sec)	V-Veloacity (m/s)	
P1	LPD1	5600	34.34	53.42	300	200	80.82	1.14	
P11	P1	1630	34.34	15.55	225	200	37.53	0.94	Sum of P1-P4, P4-P5, P5-P6, P6-P7, P7-P8 , P8-P9,P9-P10, P10-P11
P14	P11	600	34.34	5.72	150	100	18	1.02	Sum of P11-P12, P12-P13, P13-P14
P17	P1	3823	34.34	36.47	300	200	80.82	1.14	
P2	P1	309	34.34	2.95	150	100	18.00	1.02	Include P3 to P2 as well
P15	LPD2	940	34.34	8.97	150	100	18.00	1.02	sum of P16-P15 and P15-P38, P39-P38, P40-P39, P41-P40
P30	P17	2329	34.34	22.22	225	200	37.53	0.94	sum of P17-P26 , P27-P26, P30-P27
P37	P30	1605	34.34	15.31	150	100	18	1.02	sum of P33-P30 , P36-P33, P37-P36
P19	P17	1193	34.34	11.38	225	200	37.53	0.94	sum of P17-P18 , P19-P18
P19	P25	936	34.34	8.93	150	100	18	1.02	sum of P23-P22,P19 and P20- P19 , P24-P20 and P21-P20, P25-P21

Council pipe capacity calculation to ensure
post runoff is less than the council stormwater pipe capacity

Existing Pipe for between Existing Pit PB to PA

Internal Catchement Area=	940	m2
External Catchement Area=	1410	m2
Total Catchement Area=	2350	m2
Tc=	15	min
C=	0.68	
ARI=	20	YEARS
I=	50.5	mm/hr
CI=	34.34	

10000
360
1000

Using rational Formula

Q= CIA/360

Q= 0.68X50.5X0.235/360

= 0.0224 m3/sec

= 22.42 l/sec

Use manning formula to determine the required outlet pipe capacity to drain the 22.42 l/sec

Using 225mm dia UPVC at 1 in 200 minimum slope

RCP pipe diameter =	0.225	m
RCP pipe radius =	0.113	m
Wetted perimeter =	0.70695	m
Area =	0.03977	m^2
Hyd radius =	0.05625	m
slope =	0.09091	11
Mannings n =	0.011	
Capacity =	0.1600	m^3/s
Capacity =	160.02	l/sec
Velocity =	4.02	m/s

Council Pipe capacity (q=160 l/sec) > 1 in 20 ARI Flow (Q=22.42 l/sec)
Therefore existing council pipe is adequate for 1 in 5 ARI flow
No need to upgrade the existing pipe.

Location

Label: 5-13 Maxwell Dr Bridgewater TAS 7030

Latitude: -42.75 [Nearest grid cell: 42.7375 (S)]

Longitude: 147.249 [Nearest grid cell: 147.2375 (E)]

IFD Design Rainfall Intensity (mm/h)   Issued: 31 August 2022

Rainfall intensity for Durations, Exceedance per Year (EY), and Annual Exceedance Probabilities (AEP).
FAQ for New ARR probability terminology

Duration	Annual Exceedance Probability (AEP)						
	63.2%	50%#	20%*	10%	5%	2%	1%
1 min	59.3	67.3	94.0	114	135	164	189
2 min	51.2	57.7	78.6	93.3	108	126	140
3 min	45.2	51.0	69.9	83.3	96.9	114	128
4 min	40.6	46.0	63.5	76.1	89.0	106	120
5 min	37.1	42.1	58.4	70.3	82.6	99.5	113
10 min	26.9	30.6	43.0	52.2	62.0	76.4	88.5
15 min	21.8	24.8	34.9	42.5	50.5	62.4	72.4
20 min	18.7	21.2	29.8	36.3	43.1	53.1	61.4
25 min	16.6	18.8	26.3	31.9	37.8	46.4	53.5
30 min	15.0	17.0	23.7	28.7	33.9	41.4	47.6
45 min	11.9	13.5	18.7	22.5	26.4	31.9	36.3
1 hour	10.1	11.5	15.8	18.9	22.1	26.4	29.8
1.5 hour	8.06	9.12	12.5	14.8	17.2	20.3	22.7
2 hour	6.86	7.75	10.6	12.5	14.4	16.9	18.8
3 hour	5.45	6.17	8.40	9.89	11.3	13.2	14.6
4.5 hour	4.32	4.90	6.68	7.85	8.97	10.4	11.5
6 hour	3.65	4.15	5.67	6.67	7.62	8.88	9.84
9 hour	2.86	3.26	4.48	5.29	6.06	7.11	7.91
12 hour	2.39	2.73	3.77	4.47	5.13	6.06	6.79
18 hour	1.83	2.09	2.92	3.48	4.03	4.81	5.42
24 hour	1.50	1.71	2.41	2.88	3.36	4.03	4.57
30 hour	1.27	1.46	2.06	2.47	2.89	3.49	3.96
36 hour	1.11	1.27	1.80	2.17	2.54	3.07	3.50
48 hour	0.890	1.02	1.44	1.74	2.05	2.49	2.83
72 hour	0.642	0.733	1.03	1.25	1.48	1.78	2.03

S Series

SULZER

Sulzer 'Piranha' Submersible Grinder Pumps

The Sulzer 'Piranha' Series of pumps are heavy-duty, high quality submersible grinder pumps designed for pumping sewage and wastewater in residential, commercial and industrial applications.
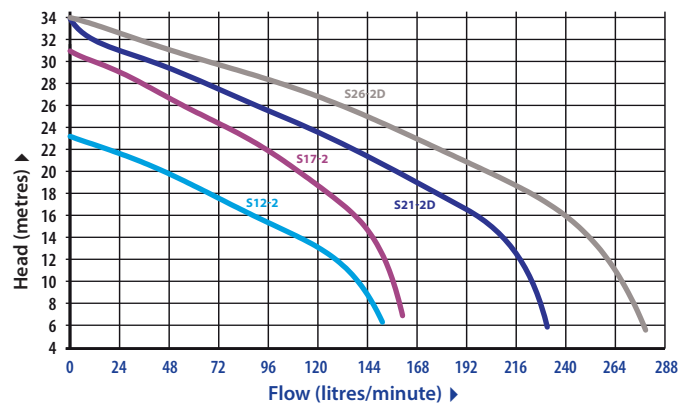
SPECIFICATION:

Six Models Available:

|	
S12/2W	1.2kW, 240 volt, Manual
S12/2D	1.2kW, 415 volt, Manual
S17/2W	1.7kW, 240 volt, Manual
S17/2D	1.7kW, 415 volt, Manual
S21/2D	2.1kW, 415 volt, Manual
S26/2D	2.6kW, 415 volt, Manual

FEATURES:

- Heavy duty cast iron construction
- Cast iron impeller and spiral bottom plate combined with stationary cutter ring and shredding rotor
- Silicon carbide mechanical seal
- Thermal overload protection
- Choice of guide rail kit (S/GR) or base stand (S/SB), see page 54
- Proven grinder design for the complete shredding of solid bodies and fibres in wastewater

PUMP PERFORMANCE:

DIMENSIONS:

MODEL	DIMENSIONS (mm)		WEIGHT (kg)
	Outlet Size	h	
S12/2D	1 ¼"	347	32
S17/2D			
S21/2D		360	37
S26/2D			40

218
310
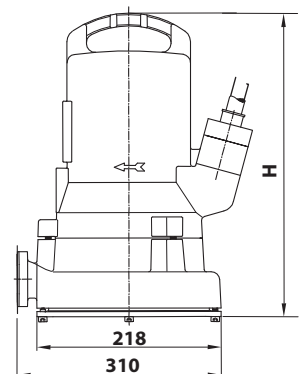
Netco Pumps reserves the right to change product specifications.

NETCO
PUMPS & EQUIPMENT

PROPOSAL

IPD Consulting

5-17 Maxwell Drive (25-Unit Development) | Sewage Pumping Station

Proposal Ref: 44205

Working with you.

March 21st, 2023

IPD Consulting
Level 2, 126 Charles Street
Launceston TAS 7250
Attn: Duncan Mayne

Dear Duncan,

RE: 5-17 MAXWELL DRIVE (25-UNIT DEVELOPMENT)

Thank you for the opportunity to present our proposal for the supply of a Netco FRP Packaged Sewage Pumping Station for your current project.

Please see full details of our proposal as set out below.

Yours faithfully,

Lyndon Cruickshank
Sales Consultant

NETCO PUMPS & EQUIPMENT

2 Austral Place, PO Box 800 p. 03 6272 6628 sales@netcopumps.com.au
Derwent Park, TAS 7009 f. 03 6272 6281 **www.netcopumps.com.au**

Sewage Pumping Station

Selection Parameters: Our pump stations are designed to specific site requirements, and there are many parameters that affect pump station design. It is important to note that this proposal has been worked out based upon the following information provided:

- Pump Duty : 3.4L/sec @ 11.63 metres TDH
- Static Head : 9.12 metres
- Rising Main Length : 100 metres
- Rising Main Size : 75mm O.D. PN10 Polyethylene
- Pump Configuration : Dual Pumps, Guide Rail Mounting
- Pumped Medium : Sewage

Please advise if any of these details are incorrect, as this could have implications regarding pump station design and cost.

We Offer :   To supply one (1) only dual-pump FRP packaged sewage pumping station model **NFRP-14KL-D/S-44205**, complete with pumps, pedestals, access covers, control panel, in-station pipework, valves, lifting chains and ancillary items.

Pump Chamber :   The pump station is constructed from a corrosion-resistant, filament-wound FRP and polyester resin, measuring 1850mm external diameter x 5400mm deep. Working capacity of the pump station is 14,000 litres.

Valve Chamber :   An integral valve chamber is included and formed as part of the pump chamber wall, measuring 1200mm x 1200mm x 1200mm. This provides independent access to the valves for maintenance purposes and helps overcome any soil subsidence problems that can typically occur on deep excavations.

Overflow Storage :   The overflow storage chamber is constructed from roto-moulded, medium-density polyethylene, measuring 1600mm external diameter x 2430mm deep. Working capacity of the overflow chamber is 4000 litres.

Pumps :   Two (2) x heavy-duty, three-phase, manual submersible 2.1kW SULZER grinder-style sewage pumps model S21/2D will be supplied and installed in the pump station. Each pump comes complete with 10 metres of DOL power cable.

Guide Rails	:	Each pump will be bolted to a matching auto-coupling and mounted on 32mm, SCH10S, 316 SS guide rails complete with mounting pedestal. This facilitates pump removal without the need for any pipework disconnection.
Access Covers	:	Two (2) x cast-iron, solid-top, heavy-duty Class D GATIC access covers suitable for heavy vehicular traffic loading will be supplied to facilitate access to the pump chamber and valve chamber for maintenance purposes.
Control Panel	:	A Netco dual-pump, three-phase control system will be supplied to facilitate automatic, alternate and simultaneous operation of the pumps via float switch control. This incorporates the following operational features:

- Powdercoated mild steel, lockable IP56 enclosure.
- Wall-mounting configuration.
- Controls mounted on inner escutcheon with lockable door over.
- Main isolation switch.
- Pump 'Manual/Off/Auto' selector push buttons.
- Pump 'run' and 'fault' indicating lights.
- 24V, 3-float control circuit.
- Visual and audible alarm system c/w external flashing strobe light.
- Alarm 'mute' and 'reset' push buttons.
- Volt-free contacts for BMS connection.

Level Control	:	Three (3) x heavy-duty MS1 series float switches with 10 metre cables will be supplied to control operation of the pumps. These are mounted in the pump chamber, secured to fabricated SS mounting brackets with the operational levels factory pre-set.
Pipework	:	The pumps will be plumbed in 63mm O.D. PN16 polyethylene pipework and fittings with electrofusion-welded joints. The pipework will terminate in a single 75mm polyethylene spigot on the side of the valve chamber wall for connection to the rising main (rising main by others).
Valves	:	Two (2) x heavy-duty 50mm AVK gate valves and two (2) x heavy-duty 50mm AVK ball check valves will be supplied and mounted on fabricated valve supports in the valve chamber.

Lifting Chains	:	Two (2) x 6mm commercial-grade 316 SS pump lifting chains will be supplied including 316 SS lifting shackles. The chains will be fixed to fabricated SS mounting brackets in the pump station.
Commissioning	:	Netco will provide full testing and commissioning of the new pump station following successful site installation and electrical connection. Documented commissioning reports will be provided for keeping on file.
Manuals	:	Pump station installation, operation and maintenance manuals will be supplied as part of the package.
Delivery	:	Freight costs are included as part of our offer, with delivery to site at Bridgewater fully included. Delivery will be on a flat tray truck with HIAB crane for unloading via soft lifting slings.
Package	:	This pump station will be supplied as a complete packaged pumping system, ready for installation in the ground and connection to all external plumbing and electrical services by the relevant contractors.

Budget	**:**	**$67, 249.00 nett. + GST**

Final Considerations

Exclusions	:	The following items have not been included as part of our offer and will need to be considered by the relevant contractors:

- Civil works - excavation, dewatering, trenching and backfill.
- Handling and installation on site
- External plumbing runs and connections.
- Venting of the pump station.
- All site electrical works, including 3-phase power supply to control panel, cabling, connections, 3 x 50mm conduits.

Availability   :   Allow 8 weeks total manufacturing/delivery timeframe from receipt of signed approved construction drawings, subject to final confirmation upon receipt of purchase order.

Manuals   :   Pump station installation, operation and maintenance manuals will be supplied as part of the package.

Quality Assurance   :   Our FRP pump station is designed and constructed within the constraints of AS2634-1983.

After Sales Support   :   Netco Pumps Pty Ltd is a wholly Tasmanian owned and operated company, with offices, warehouse and manufacturing facilities located in both Derwent Park and Burnie. We have dedicated customer support and service teams operating both in-house and in the field.

Quotation Validity   :   This proposal is valid for a period of thirty (30) days, and thereafter subject to confirmation or review.

Thank you for the opportunity to work with you on this project Duncan, it is greatly appreciated. Please feel free to contact me at any time if I can help you further in any way.

Yours faithfully,

Lyndon Cruickshank
Sales Consultant | 0488 185 589